DOCUMENT RESUME

ED 212 099 EC 141 502

TITLE	School Hearing Test Program.
INSTITUTION	Environmental Protection Agency, Washington, D.C. Office of Noise Abatement and Control.
PUB DATE	79
NOTE	25p.; Materials listed in table of contents as "inside back cover" are not included with this document.
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	Auditory Tests; Elementary Secondary Education; *Hearing Impairments; *Prevention; *Program Implementation; Records (Forms); *Screening Tests

ABSTRACT

The document offers guidelines for administration of the Hearing Test Noise Education Program, a program to teach students the harmful effects of excessive moise on their hearing and learning ability. Section 1 outlines the program strategy in terms of program initiation, suggested program coordination, suggested coordinator's responsibilities, staff resources, and evaluation. A second section contains suggested letters from the superintendent of schools to key people involved in the Hearing Test Education Program, and a third section offers a suggested press release. A form for evaluation of program effectiveness makes up Section 4. A final section for teachers includes background materials for making presentations on noise and health and a true-false quiz. (SB)

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School Hearing Test Program

1979

U.S. Environmental Protection Agency
Noise Office, ANR-471
Washington, D.C. 20460

EC 141 502

PREFACE

This document contains a suggested dissemination plan for your school system's Hearing Test Noise Education Program. The strategy that follows and suggested letters from your Superintendent of Schools to the involved key people were designed as a possible aid to help implement this program. Since various school system's modes of operations vary, this plan may be used as appropriate in your system.

Also included is a separate section for teachers with teaching material and a sample quiz.

We have included a program evaluation form that could provide us with meaningful information on the use of these materials, if your coordinator or designated school representative could take the time to provide us with this information.

We appreciate your interest and assistance in implementing this program.

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	a) Three hearing test brochures:	
	- Noise and Your Hearing (grades K-4)	
	- Hear Here! (grades 5-8)	
	- Think Quietly About Noise (grades 9 and up)	
	b) Noise: A Health Problem	
	c) Order form for additional program materials	

1
Hearing Test Noise Education Program Strategy

HEARING TEST NOISE EDUCATION
PROGRAM STRATEGY

I. PROGRAM INITIATION

To facilitate the administration of the hearing test noise education program, a suggested program strategy has been developed. Sample information packages will be sent to the Superintendent of Schools, the Director of Health Services for the School District, and the President of the PTA.

II. SUGGESTED PROGRAM COORDINATION

A. Meeting of involved parties to establish the program's overall structure.

B. Selection of one individual (or office) to act as local coordinator of the whole program:

1. Individual will identify him/herself to Ms. Jackie Copp (703/557-7695), EPA, as the contact. EPA would like to evaluate the effectiveness of the program and its support materials. Working with one person will facilitate this.

2. Coordinator will have the responsibility of ordering brochures and other support material from EPA. See samples, Think Quietly About Noise, Hear Here!, and Noise and Your Hearing, inside back cover.

3. Coordinator will be the contact for teachers in individual schools who desire additional materials.

4. Coordinator will have the responsibility of disseminating materials to the individual schools.

III. SUGGESTED COORDINATOR'S RESPONSIBILITIES

A. Coordinator will meet with individual school officials.

B. Coordinator will promote program in individual schools.

C. Coordinator will contact individual school officials to determine what materials are most appropriate for specific age groups.

D. Coordinator will determine with schools how material is to be dispersed within the school itself and how school will procure additional materials.

IV. STAFF RESOURCES

Decisions must be made regarding who will address the students on hearing and when program will be carried out (possible staff appointment for each school).

A. Noise and hearing education information should be presented to students close to the period selected for the administering of student hearing tests.

B. Suggested individuals to convey information to students:

High School and Junior High Schools -

1. Home room teachers and/or science teachers:
   - discussion need not be too long (10-15 minutes).
   - teachers can brief themselves with material, administer the true-false quiz, then give a short talk based on the test questions.
2. Nurse, audiologist, or doctor could give a similar talk at a short assembly.
3. PTA members could assist by giving a short presentation and the true-false quiz.

Elementary Schools -

1. Regular classroom teachers can speak to their students during a science or health class.
2. School nurse can give a short talk to students.

V. EVALUATION

A. After the hearing tests are administered, an evaluation would be helpful to ascertain the impact of the program on the students.

B. The evaluation could be done by the school coordinator or individual teachers.

C. Copy of results should then be forwarded to the designated coordinator of the program. The U.S. Environmental Protection Agency would appreciate a copy of the results for their evaluation purposes also. Thank you.

2
Suggested Letters from Superintendent of Schools to Key People Involved in Hearing Test Education Program

(SCHOOL LETTERHEAD)

Dear Parent,

I would like to take this opportunity to notify you that the _____ Public School System, in collaboration with the U.S. Environmental Protection Agency, will be conducting an educational program for students on the harmful effects of excessive noise on their hearing and learning ability. The program will be conducted in conjunction with the hearing tests soon to be administered throughout our school system.

The purpose of this program is to acquaint students with the hazards of exposure to noise over an extended period of time. We will point out what students can do to protect themselves from excessive noise that is detrimental to health and hearing. Researchers have shown that noise not only affects hearing, but also may seriously impair a child's learning ability. Studies have also shown that excessive noise is detrimental to reading skills development and can negatively affect communication skills.

With both health and education at stake here, I am asking you to encourage your children to take this hearing test program very seriously. After a trained professional tests your child's hearing, you will be notified if your child has a hearing problem, and proper treatment will be recommended. Your interest in this matter now may save your children from suffering further hearing loss.

There is no known cure for noise-damaged hearing. A hearing aid can only give minimal assistance. In addition, hearing loss caused by overexposure to noise comes gradually, which means that you may not be able to detect it in your children.

I urge you to take an active role in protecting your child's hearing. For your child's health, we need your help!

Sincerely,

Superintendent of Schools

(LETTER TO INDIVIDUAL GIVING NOISE PRESENTATION)

Dear

I am pleased to announce that the _____ School District will be conducting a comprehensive educational program for students on the harmful effects of excessive noise. The program will be conducted during the administration of student hearing tests. Its purpose will be to acquaint students with the hazards of exposure to excessive noise over extended periods of time, and to advise them of what they can do to protect themselves and others.

While we are all extremely excited about the program, we realize that without your cooperation its chances for success are not very good. To help you in this task, a package of teacher support material has been assembled which should give you all the backup information you will need to give a brief presentation on noise. The package is composed of:

- A fact sheet on noise
- A true-false quiz and an answer sheet
- The three brochures, "Noise and Your Hearing," "Hear Here!" and "Think Quietly About Noise," and
- The booklet, "Noise: A Health Problem."

Perhaps the best way to go about preparing your short (10-15 minutes) presentation is to begin with the true-false quiz. This quiz has been constructed in such a way as to be meaningful to students of all ages. The answers that go along with it cover most of the important points to be made about noise. You can tailor your discussion about these answers to the age of your students.

It would be helpful to have a followup evaluation of the program's impact on students. This is also included. It will give us some idea of how successful the program and support material have been in educating our students to the hazards of excessive noise. In addition, it will help us to improve future programs.

If you have any questions or want to obtain additional brochures, please contact _____, who is acting as the Coordinator for the School District.

I would like to thank you for your cooperation, and I hope the hearing and noise program is rewarding for all involved.

Sincerely,

Superintendent of Schools

(HEARING TEST ADMINISTRATOR)

I would like to inform you that in conjunction with the hearing test screening soon to be administered throughout our school system, we will also be conducting an educational program for students on the harmful effects of excessive noise. This is quite an exciting program that has been developed by the U.S. Environmental Protection Agency in collaboration with the American Speech-Language and Hearing Association. The brochures, Noise and Your Hearing, Hear, Here! and Think Quietly About Noise are being supplied to this school system free of charge by EPA.

The purpose of this program is to acquaint students with the hazards of exposure to noise over an extended period of time and what they can do to protect their hearing from excessive noise that is detrimental to health and hearing. Researchers have shown that noise not only affects hearing but also may seriously impair a child's learning ability, reading skill development, and can negatively affect communication skills.

With both health and education at stake here, I know that I have your support in this program.

Sincerely,

Superintendent of Schools

3
Suggested Press Release

(SUGGESTED PRESS RELEASE)

FOR IMMEDIATE RELEASE

SCHOOL SUPERINTENDENT ANNOUNCES
SCHOOL HEARING TEST PROGRAM
FOR PUBLIC SCHOOLS

(City, State)--Superintendent of Schools, Dr. _____ today announced that the _____ Public School System has been selected by the U.S. Environmental Protection Agency to participate in a noise education program.

The noise education portion of the program, which will coincide with the administering of hearing tests, will educate students to the dangers associated with exposure to noise over an extended period of time.

A number of recent studies have identified probable connections between noise and physical and mental health. According to Superintendent _____, "Noise constitutes one of the most pervasive health hazards in the U.S. today. Moreover, high noise levels have a direct impact on the learning process."

The program will be administered by teachers with support from PTA members and school health officials. Students will receive instruction on the subject of noise in their environment. In addition, students will be given brochures developed by the American Speech-Language and Hearing Association and EPA's Noise Office.

The hearing test program is one element of the total effort underway in _____ to inform the community's children of the harmful effects of too much noise and what they can do to protect their hearing.

4
Evaluation of Program Effectiveness

EVALUATION

HEARING TEST PROGRAM BROCHURES

To be completed by the Hearing Test Program Coordinator for the school system and sent to the EPA Noise Office.

Please complete the following information:

Brochure	Number given	No. of schools giving hearing tests
NOISE AND YOUR HEARING	_____	_____
HEAR HERE!	_____	_____
THINK QUIETLY ABOUT NOISE	_____	_____

Did any other groups receive the brochures? _____

Please list groups, brochure, and number given:

_____

_____

Do you feel that the brochures were effective? _____

_____

_____

Did any of the schools conduct a classroom-teacher evaluation to ascertain the amount of interest in the subject of noise? _____

_____

Have any of the schools and/or classrooms reported being quieter since students received brochures? _____

_____

Has the school system and/or schools received any requests for additional information on noise? _____

Please give a brief summary of the brochures' impact in your school district. _____

_____

_____

_____

We would appreciate your help and coordination in the hearing test program. Please mail to: EPA Noise Office
ANR-471
Washington, DC 20460

5
Teacher's Section
Background Teaching Materials

FACT SHEET ON NOISE FOR TEACHERS

The following material may be duplicated for use by teachers or others presenting noise and hearing information to students. Additional information can be obtained from the booklet, NOISE: A HEALTH PROBLEM.

GENERAL

- The most obvious price we pay for noise is annoyance. In extreme situations or when a person is under stress, this annoyance may express itself as rage.

- The effects of noise on health are often misunderstood or unrecognized. Further studies to clarify the role of noise as a public health hazard are needed, but we at least know from existing evidence that the danger is real.

- People who live in noisy places tend to adopt a lifestyle devoid of communication and social interaction. They speak only when absolutely necessary, change the content of the conversation, and frequently repeat themselves.

LEARNING

- Reading ability may be seriously impaired by noise. A study of reading scores of children indicated that high noise levels were detrimental to their reading development.

- In one study the influence of noise in the home on children's reading skills was found to be more important than the educational background of the parents, the number of children in the family, and the grades the children were in. The longer the children had lived in the noisy environment, the more pronounced the reading impairment.

HEARING LOSS

- Hearing loss usually occurs gradually. The first awareness of damage usually begins with misunderstanding occasional words in general conversation. But recognition comes too late to recover what is lost. There is no cure, and hearing aids do not restore noise-damaged hearing, although they can be of limited help to some people.

- People with hearing loss from exposure to noise do not necessarily live in a quiet world. The many sounds still audible to them are distorted in loudness, pitch, apparent location, or clarity. Sounds of moderate levels are frequently painful; ringing or buzzing in the ear (called tinnitus) is common to those hard-of-hearing.

HEALTH PROBLEMS

- Noise produces a stress response and the body reacts with increased adrenalin, changes in heart rate, and elevated blood pressure.

- People do not get used to noise--the body continues to react. Our bodies make automatic and unconscious responses to sudden or loud sounds. Blood pressure rises, heart rate and breathing speed up, and muscles tense. These changes even occur during sleep.

WORK

- Noise may hinder efficiency. It is more likely to reduce the accuracy of work than the total quantity.

- In the words of Leonard Woodcock, former president of the United Auto Workers, "They (auto workers) complain of headaches and inability to sleep and they suffer from anxiety....Our members tell us that the continuous exposure to high levels of noise makes them tense, irritable, and upset."

SLEEP

- Noise interferes with our sleep in a number of ways. Noise can make it difficult to fall asleep, it can wake us, and it can cause shifts from deeper to lighter sleep stages. If sleep intrusion becomes a chronic problem, it may take its toll on health.

TRUE - FALSE QUIZ ON NOISE

True	False		
____	____	1.	LOUD NOISES, OVER A PERIOD OF TIME, CAN DAMAGE A PERSON'S HEARING
____	____	2.	A PERSON'S READING SKILLS MAY BE AFFECTED BY LOUD NOISES
____	____	3.	ACCIDENTS OCCUR MORE FREQUENTLY IN NOISY PLACES
____	____	4.	THERE IS NOT MUCH PEOPLE CAN DO ABOUT NOISE
____	____	5.	HOME APPLIANCES MAY BE A BIT NOISY BUT NOT NOISY ENOUGH TO CAUSE ANY HEALTH PROBLEMS
____	____	6.	YOU CAN TELL WHEN NOISE MAY BE DAMAGING YOUR HEARING BECAUSE IT WILL HURT YOUR EARS
____	____	7.	EVERYBODY HEARS EXACTLY THE SAME
____	____	8.	LOUD NOISES MAY HURT YOUR EARS BUT THEY CAN'T AFFECT ANY OTHER PART OF YOUR BODY
____	____	9.	LOUD NOISES CAN HAVE A PHYSICAL AS WELL AS A MENTAL EFFECT ON PEOPLE.

BACKGROUND ON TRUE-FALSE QUESTIONS

TEACHER'S NOTES

1. TRUE - While the ear is an amazingly resilient organ, exposure to loud noise over a long period can permanently damage a person's hearing. Hearing loss comes gradually, which makes it difficult to realize what is happening until it is too late.

2. TRUE - Reading ability may be seriously impaired by noise. A study of reading scores of 5⅘ children in grades 2 through 5 indicated that noise levels in adjacent apartment buildings were detrimental to the children's reading abilities. The influence of noise in the home was found to be a more significant factor affecting reading ability than the parents' educational background, the number of children in the family, or the grades the youngsters were in. The longer the children had lived in a noisy environment, the more pronounced the reading impairment.

3. TRUE - The inability to hear warning signals or calls because of high background noise is thought to be the cause of many accidents each year. Traffic accidents occur and lives are lost because drivers are unable to hear the sirens from nearby or passing emergency vehicles. One study has estimated that when a fire truck or ambulance is in the process of passing a truck, the truck driver is able to detect the siren for only a very short time--three seconds or less. The concern over preventable accidents also is great in noisy industrial settings, which can hinder communication between employees and the hearing of warning signals.

4. FALSE - Noise is a problem that everyone can take part in correcting. Here are a few suggestions that can be implemented in your own homes:

- Use foam pads under blenders, mixers, and food processors to absorb noise.
- Use caution in buying toys for your younger brothers or sisters (or playing with certain toys). Some toys emit intensive or explosive sounds and may be damaging to hearing.
- Listen to your radio or stereo at a reasonable volume to avoid disturbing neighbors and damaging your ears.
- Make sure that your family has carpeting in areas where there is a lot of foot traffic. It is amazing how much noise carpeting can absorb.

5. FALSE - Vacuum cleaners, washing machines, blenders, mixers, shop tools, and other appliances can emit noises which, if experienced over a long period of time, can harm hearing. The point is, however, something can be done about all these problems. Dishwashers and washing machines can be placed in areas that can be shut off from where people are trying to speak or rest, and rubber padding can be placed under blenders and mixers to absorb sound. Ear plugs or other hearing protectors can be worn while operating noisy appliances. Remember, there is an answer to every noise-related problem around your home.

6. FALSE - One of the problems with noise-damaged hearing is that in most cases a person cannot tell that hearing is being damaged until it is too late. Except in cases of close exposure to explosive noises, damage from excessive noise appears gradually. However, once it occurs there is no way to repair the damage. In addition, it is a mistake to believe that people with noise-damaged hearing necessarily live in a quieter world. The sounds which are still audible to them become distorted in loudness, pitch, apparent location, or clarity. Ringing or buzzing in the ears (tinnitus) is common, and sounds of moderate volume may be painful.

7. FALSE - As in everything else related to the human mechanism, no two people are exactly alike. One person's ability to hear may be naturally more sensitive than another's. However, everyone's hearing is alike in one respect: it is vulnerable to damage caused by excessive noise.

8. FALSE - Our bodies make automatic and
and unconscious responses to sudden or
9. TRUE loud sounds, reacting as if these sounds were always a threat or warning. Blood pressure rises, heart rate and breathing speed up, muscles tense, hormones are released into the bloodstream, and perspiration appears. These changes occur even during sleep.

Even when we think we have become accustomed to noise, biological changes still take place inside us. Researchers continue to debate whether the body's automatic responses build on each other, leading to "diseases of adaptation," such as ulcers, asthma, high blood pressure, headaches, and colitis.